

a flow channel defined therein for guiding a flow of a fluid containing the particles through the flow channel, the flow channel having an inlet end and an outlet end, the particles remaining in the flow channel for a time, and the particles flowing in a path through the channel at a fluid flow rate, the path of flow having a width and a position,

first inlet means positioned at the inlet end of the flow channel for entering the fluid into the flow channel,

second inlet means for entering a first guiding buffer for controlling cross-section and flow path through the flow channel of the flow of the fluid containing particles, the first guiding buffer having a flow rate,

first outlet means positioned at the outlet of the flow channel for discharging the fluid from the flow channel,

the flow of the fluid containing the particles being controlled in such a way that one particle at a time passes a cross-section of the flow channel,

the member being positioned in a field that is substantially perpendicular to a longitudinal axis of the flow channel so that particles residing in the flow channel and being susceptible to the field across the flow channel are deflected into the first guiding buffer toward the field.

Continued
41. (NEW) A micro flow system according to claim ¹40, further comprising third inlet means for entering a second guiding buffer for further controlling the cross-section and the path through the flow channel of the flow of the fluid containing particles, wherein the first and second guiding buffer surround the flow of the fluid containing particles, the first and second guiding buffers having a flow rates.

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3 ~~42~~. (NEW) A micro flow system according to claim ~~41~~, wherein the width and the position of the flow of fluid containing particles is controlled by adjusting volumetric

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ratio between the fluid flow rate of the flow of fluid containing particles and the flow rate of the guiding buffers.

⁴43. (NEW) A micro flow system according to claim ¹40, wherein the member further comprises field generating means positioned proximate to the flow channel for generating a field substantially perpendicular to the longitudinal axis of the flow channel.

⁵44. (NEW) A micro flow system according to claim ¹40, further comprising monitoring means positioned at the flow channel for monitoring parameters of a particle residing within a measurement volume within the flow channel and providing an output signal corresponding to a monitored parameter.

⁶45. (NEW) A micro flow system according to claim ⁵44, wherein the monitoring means comprise optical detection means for monitoring optical parameters of a particle residing within a measurement volume within the flow channel and providing an output signal corresponding to an optical parameter.

⁷46. (NEW) A micro flow system according to claim ⁵44, wherein the monitoring means comprises a Hall sensor for measurement of a magnetic parameter of a magnetic particle within a specific volume of the flow channel.

⁸47. (NEW) A micro flow system according to any of claim ⁵44, further comprising field generating control means for controlling the strength of the field generated by a field generating means in response to the output signal of the monitoring means whereby particles are separated according to values of a parameter monitored by the monitoring means.

⁹48. (NEW) A micro flow system according to claim ¹40, wherein the flow of the fluid containing the particles through the channel has a Reynolds number between 0.01 and 500.

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49. (NEW) A micro flow system according to claim ⁹48, wherein the flow of fluid containing the particles through the channel has a Reynolds number between 0.5 and 50.

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50. (NEW) A micro flow system according to claim ⁹48, wherein the flow of fluid containing the particles through the channel has a Reynolds number between 0.1 and 25.

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51. (NEW) A micro flow system according to claim ¹40, wherein a portion of the flow channel has a lowest cross-sectional area, the lowest cross-sectional area of the flow channel is between 0.004 mm² and 0.11 mm².

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52. (NEW) A micro flow system according to claim ¹40, further comprising second outlet means for discharging particles having been deflected in the flow channel.

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53. (NEW) A micro flow system according to claim ⁴43, wherein the field generating means comprises a magnet.

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54. (NEW) A micro flow system according to claim ¹⁴53, wherein the field generating means further comprises ferrite members positioned at the flow channel for focussing of a magnetic field.

Contd. ¹⁶
55. (NEW) A micro flow system according to claim ⁴43, wherein the field generating means comprises an electrode.

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56. (NEW) A micro flow system according to claim ⁴43, wherein positions in relation to the flow channel of the field generating means are adjustable for adjustment of the strength of the field across the flow channel.

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57. (NEW) A micro flow system according to claim ¹40, further comprising flow speed adjustment means for adjustment of the time the particles reside in the flow channel.

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58. (NEW) A micro flow system according to claim ¹~~40~~, further comprising a cover for covering the flow channel.

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59. (NEW) A micro flow system according to claim ¹⁹~~58~~, wherein the cover is a transparent or translucent cover allowing optical monitoring of the flow channel.

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60. (NEW) A micro flow system according to claim ¹³~~52~~, wherein the deflected particles comprise living cells.

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61. (NEW) A micro flow system according to claim ¹³~~52~~, wherein the deflected particles comprise beads, microspheres, chromosomes, organelles, biomolecules, or proteins.

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62. (NEW) A micro flow system according to claim ¹³~~52~~, wherein the deflected particles have been magnetically, chromophorically, or fluorescently stained.

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63. (NEW) A micro flow system according to claim ⁴~~43~~, further comprising a plurality of outlets for discharging of particles separated according to their different susceptibility to the field across the flow channel.

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64. (NEW) A micro flow system according to claim ¹~~40~~, wherein the member further comprises one or more pre-treatment facilities, one or more post-treatment facilities, or one or more pre-treatment and post-treatment facilities.

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65. (NEW) A micro flow system according to claim ²⁵~~64~~, wherein the pre-treatment facilities comprise incubation means for preparing or pre-reacting the fluid comprising the particles.

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66. (NEW) A micro flow system according to claim ²⁵~~64~~, wherein the pre-treatment facilities comprise means for magnetic, fluorescent, or chromophoric staining.

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~~67~~. (NEW) A micro flow system according to claim ²⁵~~64~~, wherein the post-treatment facilities comprise means for collecting or concentrating the deflected particles.

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~~68~~. (NEW) A micro flow system according to claim ²⁵~~64~~, wherein the post-treatment facilities comprise means for bringing the deflected particles into contact with one or more reagent(s).

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~~69~~. (NEW) A micro flow system for analyzing components of a fluid, comprising

a member having a flow channel defined therein for guiding a flow of a fluid through the flow channel,

first inlet means for entering particles into the flow channel,

first outlet means for discharging of fluid from the flow channel and a plurality of assay sites located in the flow channel and comprising immobilized reagents whereby the fluid may be analyzed for a plurality of components while residing in the flow channel, and

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field generating means positioned proximate to at least some of the assay sites for generation of a field proximate to the corresponding assay site whereby reagents residing in the flow channel and being susceptible to the field when generated at a selected assay site are attracted to and immobilized at the selected assay site, or, are rejected from the selected assay site.